

B. Remarks

The claims are 1-6, with claims 1, 3 and 6 being independent.

Reconsideration of the present claims is expressly requested.

Claims 1-3, 5 and 6 stand rejected under 35 U.S.C. § 103(a) as being allegedly obvious from U.S. Patent No. 6,218,035, issued to Fuglevand et al. (“Fuglevand”) in view of U.S. Patent Application Publication No. 2003/0129467, in the name of Morishima et al. (“Morishima”). Claim 4 stands rejected under 35 U.S.C. § 103(a) as being allegedly obvious from Fuglevand in view of Morishima as applied to claim 3, and further in view of U.S. Patent No. 6,523,699, issued to Akita et al. (“Akita”). The grounds of rejection are respectfully traversed.

Prior to addressing the merits of rejection, Applicants would like to briefly discuss some of the features of the presently claimed invention. That invention, in pertinent part, is related to a membrane electrode assembly for a proton-exchange membrane fuel cell, a method for its production, and a proton-exchange membrane fuel cell that includes this assembly. The presently claimed assembly comprises a polymer electrolyte membrane and an electrode catalyst layer. The polymer electrolyte membrane is formed by polymerizing a composition containing at least a compound having proton conductivity and a compound having activity to an active energy ray, or a composition containing at least a compound having proton conductivity and activity to the active energy ray. Importantly, at least a part of the polymer electrolyte membrane infiltrates into the electrode catalyst layer. The infiltration is due to the coating of the electrode catalyst layer with a liquid solution of the aforementioned compounds, thereby increasing the contact between the electrolyte membrane and the catalyst, prior to polymerization.

Fuglevand, on the other hand, is related to a proton exchange membrane fuel cell power system that forms an electrolyte membrane by photo-curing or thermally polymerizing the electrolyte membrane material by itself. *See* Examples 1-3, cols. 19-22. The polymerized membrane is then sandwiched between the electrodes. The Examiner conceded that Fuglevand does not teach the method of the claimed invention. *See* Office Action, p. 6. The Examiner, however, now asserts that Morishima teaches a membrane electrode assembly made by a method in which an electrolyte solution is coated onto the catalyst layer, such as in the present invention. Applicants respectfully disagree.

Morishima discloses a method for assembling an electrolyte membrane in which a mixture of a catalyst powder and a fluorine resin is coated on a carbon paper and heat-treated to form a catalyst layer. The catalyst layer is then coated with a solution of the electrolyte and hot pressed to a solid polymer membrane. *See* paragraph [0049]. Since the solid polymer membrane (*see* Abstract and paragraph [0037]) is already formed when it is joined with the catalyst layer, the polymer electrolyte membrane is not infiltrated into the electrode catalyst layer as recited in the claimed invention.

Moreover, the electrolyte solution coating referred to by the Examiner is not the same as the electrolyte membrane of the present invention. Morishima does not teach that this electrolyte solution is polymerized when coated on a catalyst layer, as taught by the present invention. In fact, there is no disclosure suggesting that hot pressing an electrolyte solution made of the same material as the membrane based on the teaching of Morishima would lead to polymerization and infiltration in the context of Fuglevand. In addition, proton conductivity would be lowered in Morishima's electrode membrane

assembly, as compared to the claimed invention, due to 1) the layer of fluorine resin between the catalyst powder and the electrolyte membrane and 2) the interface formed between the electrolyte solution coating of the catalyst layer and the electrolyte membrane.

Akita cannot cure the deficiencies of Fuglevand and Morishima. Akita was cited for the teaching related to the platinum catalyst thickness. Even if the Examiner is correct, Akita, like Fuglevand and Morishima, does not disclose or suggest the presently claimed infiltration.

Accordingly, Applicants respectfully submit that the cited documents, whether considered separately or in combination, do not disclose or suggest all of the presently claimed elements.

Wherefore, withdrawal of the outstanding rejections and passage of the application to issue are respectfully requested.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

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